C. Remarks

The claims are 1, 2, 5, 7-11, 13, and 16-22, with claim 1 being the sole independent claim. Claim 1 has been amended to better define the present invention. Support for this amendment may be found, for example, in the specification at page 20, line 4, to page 21, line 11, as well as in Fig. 4. No new matter has been added. Reconsideration of the present claims is expressly requested.

Claims 1, 2, 5, 7-11, 13, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from U.S. Patent No. 5,994,150 (Challener) in view of U.S. Patent Application Publication No. 2002/0021445 A1 (Bozhevolnyi) and U.S. Patent No. 6,642,881 B1 (Lawrence). Claims 19-22 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from Challener in view of Bozhevolnyi and further in view of Lawrence and U.S. Patent Application Publication No. 2003/0100127 A1 (Corn). The grounds of rejection are respectfully traversed.

Prior to addressing the merits of the rejections, Applicants would like to briefly review some of the features and advantages of the presently claimed invention. That invention, in pertinent part, is related to a sensor device for detecting a reaction of a sensor material with a specimen based on an intensity of a surface plasmon polariton (SSP) wave generated by light irradiation and propagated along a surface of a sensor medium. This device includes the sensor medium, which comprises a substrate, a metal film having a plurality of openings formed on the substrate, and the sensor material positioned on the metal film for reacting with the specimen.

Importantly, the openings in this device (a) have a size smaller than a wavelength of the irradiation light; (b) have a predetermined pitch that is substantially equal to an integral multiple of a wavelength of the SPP wave; and (c) include adjacent two openings sandwiching a metal film portion having a circumferential effective length based on a thickness of the metal film, which is a substantially integral multiple of a wavelength of the SSP wave:

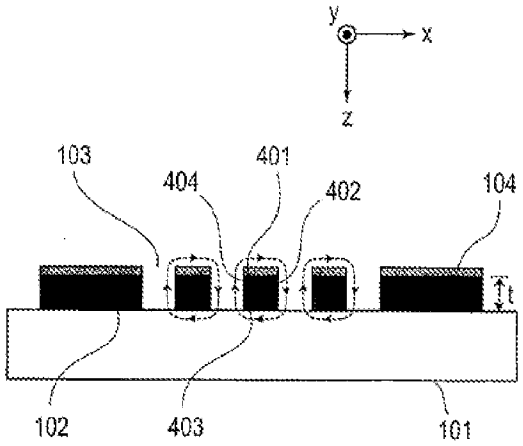


FIG.4

Due to the size of the openings being as recited in (a) above, the SPP wave is effectively generated. Due to the predetermined pitch being as recited in (b), the SPP waves propagated on the surface of the metal film have the same phase, leading to an increase in their amplitude, which improves sensitivity (page 15, line 14, - page 16, line 1). In addition, due to the two adjacent openings being as recited in (c), the SPP waves, which move around the metal film through the openings, also have the same phase (page 19, lines 6-23). Thus, while the height of resonance peak in the light intensity of the spectrum is

further increased, the width thereof decreases, which results in an addition improvement in sensitivity.

Challener discloses a surface plasmon resonance grating sensor using a metal layer, such as shown in Figures 3 and 4:

Fig. 3

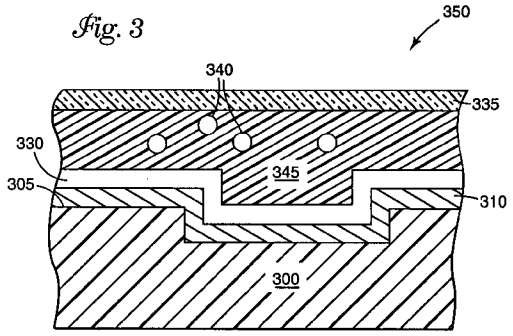
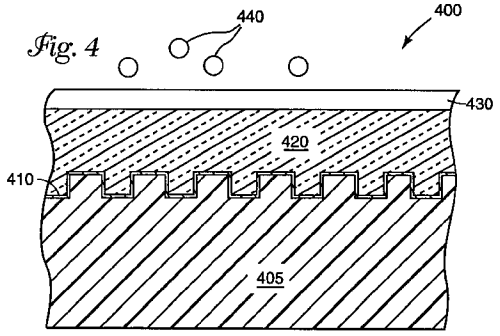


Fig. 4



However, as is evident from the figures and as acknowledged by the Examiner, this metal layer does not have openings. Consequently, Challener also fail to disclose or suggest a pitch of the openings and a particular relationship between the SPP wave and a metal film portion sandwiched between two adjacent openings. In sum, Challener does not disclose or suggest any of the above features (a)-(c).

Lawrence discloses a radiation absorber in which a dielectric member is disposed on a metal plate having a corrugated surface. Lawrence describes coupling between the corrugated surface and the SPP wave at column 3, lines 50-67. However, Lawrence does not utilize a metal film with openings. Thus, like Challener, this reference also fails to disclose or suggest both the pitch of openings and the particular relationship between the metal film portion sandwiched between the SPP wave and the metal film portion sandwiched between two adjacent openings.

The Examiner alleged that (i) Lawrence, in Fig. 1, and Challener, in Fig. 4, show two indentations or openings sandwiching peaks; (ii) Lawrence, at column 4, lines 46-55, discloses that amplitude and pitch of a grating is a multiple of wavelength; and (iii) Challener, at column 6, lines 9-11, discloses that a grating is square and, as such, the circumference is a multiple of wavelength. Specifically, the Examiner alleged that given a grating projection, which is square in profile as described by Challener and which is surrounded by openings as described by Bozhevolnyi, when the amplitude and height of this grating projection is a substantially integral multiple of a wavelength of a wave as described by Lawrence, the grating projection will inherently have a circumference that is a substantially integral multiple of a wavelength of the wave as all sides of a square have equal lengths. Applicants respectfully disagree.

Lawrence, at column 4, lines 46-55, refers to the relationship of the amplitude and pitch of the grating with respect to the wavelengths to be absorbed, i.e., an SSP wave damper is disclosed. Thus, it is clear that one skilled in the art would not use the

parameters designed for dampening SSP waves disclosed in Lawrence in a sensor medium designed to propagate SSP waves disclosed in Challener. Furthermore, Lawrence, even within its own context, does not refer to a circumferential effective length based on a thickness of the metal film, which is a substantially integral multiple of a wavelength of the SSP wave. The circumference to which the Examiner referred is different-in-kind from the one presently claimed and is not based on the thickness of the metal film.

Bozhevolnyi cannot cure the deficiencies of Challener and Lawrence. Bozhevolnyi is directed to SPP band gap structures. While this reference mentions a possible use of an SSP carrying medium that can have deformation in the form of holes, Bozhevolnyi fails to disclose or suggest the parameters as recited in (a)-(c) above.

Corn was cited in connection with a photodetector. This references provides no guidance as to the features (a)-(c), which are absent in the other references.

In conclusion, Applicants respectfully submit that the cited references, whether considered separately or in any combination, fail to disclose or suggest all of the features of the presently claimed invention.

Wherefore, withdrawal of the outstanding rejections and passage of the application to issue are respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Jason M. Okun/
Jason M. Okun
Attorney for Applicants
Registration No.: 48,512

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

FCHS_WS 3765974_1.DOC